SECTION 4

Summary of 1998 RI Sampling Program

4.1 Quarterly Sampling Activities

4.1.1 Description of Activities

EPA's RI monitoring wells in the San Fernando Valley Basin (SFVB) were sampled during three quarterly events conducted by CH2M HILL during 1998 (Table 1-1). Two of the three events (March 9 through March 17 and October 1 through October 12) were quarterly sample events and consisted of collecting groundwater samples from RI monitoring wells for VOCs and nitrate/nitrite analyses. MTBE, hexavalent chromium, perchlorate, and 1,4-dioxane were included in the analyte list for the October sampling event. The triannual sampling event, June 8 through June 25, involved collecting groundwater samples from 84 RI monitoring wells for VOCs, metals, nitrate/nitrite, and general water chemistry analyses. During this event, samples were also collected and submitted for MTBE, hexavalent chromium, perchlorate, and 1,4-dioxane.

Water levels were measured at each of the RI monitoring wells prior to sampling. These data were incorporated into the GIS database and converted to elevations above MSL. A comparison of depth to water (bgs) and water level elevation (MSL) for the RI monitoring wells at the time of each sample event during 1998 is provided in Table 2-1.

During each sample event, each well was purged three to five well volumes prior to sampling. During purging, pH, temperature, electric conductivity, and turbidity of the groundwater were measured over time to ensure that these parameters stabilized prior to sampling. Table 2-2 presents a comparison of these parameters at each RI monitoring well during each sampling event conducted during 1998.

Prior to the first quarter 1998 sampling event, scheduled maintenance activities conducted included installation of new pumps in monitoring wells CS-VPB-01, NH-VPB-13, PO-VPB-02, and PO-VPB-10. Vault repairs were conducted at NH-VPB-10 and NH-VPB-14; and, one well, PO-C02-53 was re-drilled approximately 10 feet from the original well.

Purge water, or investigative derived waste (IDW), was collected from each RI monitoring well in a vacuum truck and transported to purge water storage tanks located at LADWP's Headworks Spreading Grounds staging area. Approximately 55,253 gallons of IDW collected during the three sampling events completed in 1998 were transported to the LADWP's Headworks Spreading Grounds staging area. VOC concentrations in the IDW stored at the LADWP's Headworks Spreading Grounds staging area were monitored, and, when observed to be below MCLs, the purge water was discharged into the storm drains.

4.1.2 TCE Concentrations

Reported TCE concentrations at RI monitoring wells sampled during 1998 remained generally consistent (Table 4-1). The number of RI monitoring wells exhibiting concentrations of TCE greater than the MCL of 5 µg/L remained fairly consistent, ranging from 31 monitoring wells in the first quarter, 32 wells in the second quarter, to 33 wells in the third quarter.

Comparison of TCE concentrations at the RI monitoring wells shows four wells (CS-VPB-01, NH-C02-520, NH-C04-240, and NH-VPB-05) exhibiting an increase during 1998 (5 to 7 µg/L, 81 to

130 µg/L, 36 to 120 µg/L, 3 to 8 µg/L, and 3 to 9 µg/L, respectively). Two of these (NH-C04-240 and NH-VPB-05) are now exceeding the MCL. Two wells exhibited a decrease; however, only one to below the MCL: NH-CO3-380 (7 to 2 µg/L). Eleven monitoring wells exhibited a significant variation during 1998. These significant variations in TCE concentrations during 1998 appear to be artifacts of sampling or laboratory errors during the second sampling event, because concentrations are comparable between the first and third quarters.

4.1.3 PCE Concentrations

PCE concentrations at RI monitoring wells sampled during 1998 also exhibited little change throughout the year (Table 4-2). The number of RI monitoring wells exhibiting concentrations of PCE greater than the MCL of 5 µg/L ranged from 27 wells in the first quarter to 25 wells in the second and third quarters.

A review of PCE data obtained from RI monitoring during 1998 shows one well (CS-VPB-01) exhibiting an increase (65 to 170 µg/L). Five wells (CS-VPB-06, CS-VPB-07, NH-C03-380, NH-VPB-07, and NH-VPB-14) exhibited a decrease. Three of these wells (CS-VPB-06, NH-C03-380, and NH-VPB-07) decreased to below the MCL (6 to 5 µg/L, 11 to 0.5 µg/L, and 14 to 3 µg/L, respectively). As with TCE, nine wells exhibited a significant variation during 1998. These significant variations in TCE concentrations during 1998 appear to be artifacts of sampling or laboratory errors during the second sampling event, because concentrations are comparable between the first and third quarters.

4.1.4 Other VOCs

During 1998, VOCs other than TCE and PCE were observed above MCLs in nine RI monitoring wells during the first quarter, six monitoring wells in the second quarter, and seven wells in the third quarter. Compounds reported include 1,1-dichloroethane at CS-CO3-100 and CS-VPB-07; 1,1-dichloroethene at CS-CO3-100, CS-VPB-04, CS-VPB-05, CS-VPB-06, CS-VPB-07, PO-VPB-02, and PO-VPB-08; and carbon tetrachloride at CS-CO3-100, CS-VPB-04, CS-VPB-06, CS-VPB-07, and NH-C02-520. During the first quarter sample event, methylene chloride was reported at seven monitoring wells. This compound is believed to be a sampling artifact because it has not been a chemical of concern during previous sampling events nor was it reported during the subsequent events of 1998.

Additional sampling for MTBE showed detections at 11 monitoring wells; however, the concentration at six of these wells was 1 µg/L or less. The maximum concentration was 26 µg/L at NH-VPB-01.

4.1.5 Nitrate

The number of RI monitoring wells exceeding the nitrate MCL of 45 mg/L (as NO_3) ranged from 12 to 23 during 1998 (Table 4-3). During the first quarter, 12 monitoring wells exceeded the MCL, with 23 in the second quarter, and 17 during the third quarter. Six wells (CS-VPB-09, NH-C05-320, NH-VPB-02, NH-VPB-03, NH-VPB-04, and PO-VPB-10) sampled during the 1998 triannual event exceeded the MCL and are comparable to values observed during previous annual or triannual events.

4.1.6 Perchlorate

Sampling for perchlorate was conducted three times during 1998. An initial sampling was conducted between January 27 to January 29, concurrent with repair activities on RI monitoring wells. This event served as a confirmation of the results obtained from 19 wells previously sampled by CDM during the fall of 1997. This initial sampling indicated concentrations with nondetects at all wells with the exception of V13LBMW3, which had a concentration of 18 µg/L.

Additional sampling for perchlorate was conducted during the second and third sampling events. During the second quarter sampling event, additional monitoring wells from the triannual sampling schedule were included. All of the monitoring wells had concentrations below 7.0 µg/L, with the exception of two, CS-C06-278 and PO-C01-354, with concentrations of 84.4 µg/L and 76.7 µg/L, respectively. As these wells were in the triannual sampling schedule, they were not re-sampled during the following event. However, they will be included in future quarterly events.

4.1.7 Metals

Analysis of dissolved metals was conducted during the second quarter 1998 sampling event. Metals that were reported above primary and secondary MCLs included dissolved iron, dissolved manganese, dissolved antimony, and dissolved chromium (Table 2-9). Antimony was the most common dissolved metal reported in RI monitoring wells during this event (18 monitoring wells exceeded 6 µg/L). The presence of dissolved chromium in monitoring well CS-VPB-04 remained comparable to the concentrations observed. Monitoring well PO-VPB-02, which also has previously exceeded the MCL for dissolved chromium, was not sampled because of an inoperable pump.

Analysis for hexavalent chromium was included in the analyte list during the second and third quarter sampling events. During the second quarter, two wells (CS-VPB-04 and PO-VPB-02) indicated concentration of hexavalent chromium exceeding the MCL. During the third quarter, the same two wells indicated concentration of hexavalent chromium above the MCL.

4.1.8 Other Analytical Parameters

During the second quarter sampling event, groundwater was analyzed for general water chemistry parameters including chloride, sulfate, total alkalinity, hardness, TDS, and TOC (Table 2-8). TDS values ranged from 239 (NH-C012-681) to 1,100 mg/L (CS-VPB-09). The secondary MCL (500 mg/L) for TDS was exceeded in 43 of the 82 RI monitoring wells during the second quarter (Table 2-8). Total alkalinity ranged from 116 mg/L (VD-VPB-06) to a high of 548 mg/L (CS-VPB-09). All RI monitoring wells were below the secondary MCL for sulfate (250 mg/L), with the exception of NH-C06-425, which had a concentration of 396 mg/L.